

Claims:

1. A process for increasing the intrinsic viscosity of a polyester material by solid-state polymerization, wherein the polyester material is heat-treated in a heat treatment container and the polyester material is introduced into a preheating container prior to being conveyed into the heat treatment container, characterized in that the polyester material is heated in the preheating container under vacuum, preferably at between 0.1 and 10 mbar, to a heat treatment temperature of the heat treatment container or to a temperature above that, preferably to essentially the heat treatment temperature, with the heat transfer to the polyester material being effected in the preheating container by means of a heated agitator, and the polyester material is delivered to the heat treatment container after having reached said temperature, with the heat treatment container being maintained under vacuum, preferably at between 0.1 and 10 mbar.
2. A process according to claim 1, characterized in that the preheating container has a double-walled design and is heated by conducting a heat-transfer medium through the cavity of the double wall.
3. A process according to claim 1 or 2, characterized in that the heated polyester material is delivered in batches from the preheating container to the heat treatment container.
4. A process according to any of claims 1 to 3, characterized in that the heat treatment temperature amounts to at least 180 °C.
5. A process according to any of claims 1 to 4, characterized in that the heat treatment container is heated via wall heating.
6. A process according to any of claims 1 to 5, characterized in that the preheating container is integral with the entrance area of the heat treatment container.
7. A process according to any of claims 1 to 6, characterized in that, at the outlet of the heat treatment container, the temperature of the polyester material is measured and the polyester material is returned to the preheating container or the inlet of the heat treatment container if the temperature is insufficient.
8. A process according to any of claims 1 to 7, characterized in that the polyester material to be treated is supplied to a plurality of preheating containers comprising downstream heat

treatment containers or to one preheating container comprising several downstream heat treatment containers.

9. A process according to any of claims 1 to 8, characterized in that the polyester material to be treated is granulated prior to being introduced into the preheating container.

10. A process according to any of claims 1 to 9, characterized in that the heat-treated polyester material, after having being discharged from the heat treatment container, is delivered still in the heated state to an extruder or a melt-processing device, for example an injection-moulding machine.

11. A device for increasing the intrinsic viscosity of a polyester material by solid-state polymerization via a heat treatment in a heat treatment container, characterized in that the heat treatment container (6) is preceded by a preheating container (2) for heating the polyester material to a heat treatment temperature of the heat treatment container or to a temperature above that, preferably to essentially the heat treatment temperature, wherein a vacuum, preferably of between 0.1 and 10 mbar, can be applied to the preheating container (2) and to the heat treatment container (6) and the preheating container (2) is provided with a heated agitator (4).

12. A device according to claim 11, characterized in that the preheating container (2) is connected with the heat treatment container (6) via a slide (5).

13. A device according to claim 11 or 12, characterized in that the heat treatment container (6) is provided with wall heating (10) or is an unheated container with heat insulation (11).

14. A device according to claim 11, characterized in that the preheating container (2') is integral with the entrance area of the heat treatment container (6'). (Fig. 4)

15. A device according to any of claims 11 to 14, characterized in that a temperature sensor (13) for measuring the temperature of the polyester material and a conduit (14) for returning the polyester material to the preheating container or the inlet of the heat treatment container is provided at the outlet of the heat treatment container (6'), with the polyester-material discharge stream being redirectable into the return conduit depending on its measured temperature.

16. A device according to any of claims 11 to 15, characterized in that it exhibits a plurality of preheating containers comprising downstream heat treatment containers or one preheating container comprising a plurality of downstream heat treatment containers.

17. A device according to claim 11, characterized in that the preheating container is preceded by a granulation unit for the polyester material.

18. A device according to claim 11, characterized in that an extruder or a melt-processing device, for example an injection-moulding machine, is arranged downstream of the heat treatment container.